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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/626,946	07/27/2000	Brenda Lynn Dietrich	YOR9-2000-0474US1	9416
48150	7590	04/29/2005	EXAMINER	
MCGINN & GIBB, PLLC 8321 OLD COURTHOUSE ROAD SUITE 200 VIENNA, VA 22182-3817			GARG, YOGESH C	
			ART UNIT	PAPER NUMBER
			3625	

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/626,946

Applicant(s)

DIETRICH ET AL

Examiner

Yogesh C Garg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>4/25/05</u> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Request for Reinstatement of Appeal brief

1. This action is in response to Applicant's request for reinstatement of Appeal Brief, paper # 12, received on 1/20/2004. Prosecution is reopened. Claims 1-20 are currently pending for examination. This is a non-final rejection.

Claim Rejections - 35 USC § 101

2 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-8 and 11-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

2.1. Claimed Invention(s) does not fall within the Technological Art.

As an initial matter, the United States Constitution under Art. I, §8, cl. 8 gave Congress the power to "[p]romote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries". In carrying out this power, Congress authorized under 35 U.S.C. §101 a grant of a patent to "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition or matter, or any new and useful improvement thereof." Therefore, a fundamental premise is that a patent is a statutorily created vehicle for Congress to confer an exclusive right to the inventors for "inventions" that promote the progress of "science and the useful arts". The phrase "technological arts" has been created and used by the courts to offer another view of the term "useful arts". See *In re Musgrave*, 167 USPQ (BNA) 280 (CCPA 1970). Hence, the first

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test of whether an invention is eligible for a patent is to determine if the invention is within the "technological arts".

Further, despite the express language of §101, several judicially created exceptions have been established to exclude certain subject matter as being patentable subject matter covered by §101. These exceptions include "laws of nature", "natural phenomena", and "abstract ideas". See *Diamond v. Diehr*, 450, U.S. 175, 185, 209 USPQ (BNA) 1, 7 (1981). However, courts have found that even if an invention incorporates abstract ideas, such as mathematical algorithms, the invention may nevertheless be statutory subject matter if the invention as a whole produces a "useful, concrete and tangible result." See *State Street Bank & Trust Co. v. Signature Financial Group, Inc.* 149 F.3d 1368, 1973, 47 USPQ2d (BNA) 1596 (Fed. Cir. 1998).

This "two prong" test was evident when the Court of Customs and Patent Appeals (CCPA) decided an appeal from the Board of Patent Appeals and Interferences (BPAI). See *In re Toma*, 197 USPQ (BNA) 852 (CCPA 1978). In *Toma*, the court held that the recited mathematical algorithm did not render the claim as a whole non-statutory using the Freeman-Walter-Abele test as applied to *Gottschalk v. Benson*, 409 U.S. 63, 175 USPQ (BNA) 673 (1972). Additionally, the court decided separately on the issue of the "technological arts". The court developed a "technological arts" analysis:

The "technological" or "useful" arts inquiry must focus on whether the claimed subject matter...is statutory, not on whether the product of the claimed subject matter...is statutory, not on whether the prior art which the claimed subject matter purports to replace...is statutory, and not on whether the claimed subject matter is presently perceived to be an improvement over the prior art, e.g., whether it "enhances" the operation of a machine. In *re Toma* at 857.

In *Toma*, the claimed invention was a computer program for translating a source human language (e.g., Russian) into a target human language (e.g., English). The court found that the

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claimed computer implemented process was within the "technological art" because the claimed invention was an operation being performed by a computer within a computer.

The decision in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.* never addressed this prong of the test. In *State Street Bank & Trust Co.*, the court found that the "mathematical exception" using the Freeman-Walter-Abele test has little, if any, application to determining the presence of statutory subject matter but rather, statutory subject matter should be based on whether the operation produces a "useful, concrete and tangible result". See *State Street Bank & Trust Co.* at 1374. Furthermore, the court found that there was no "business method exception" since the court decisions that purported to create such exceptions were based on novelty or lack of enablement issues and not on statutory grounds. Therefore, the court held that "[w]hether the patent's claims are too broad to be patentable is not to be judged under §101, but rather under §§102, 103 and 112." See *State Street Bank & Trust Co.* at 1377. Both of these analysis goes towards whether the claimed invention is non-statutory because of the presence of an abstract idea. Indeed, *State Street* abolished the Freeman-Walter-Abele test used in *Toma*. However, *State Street* never addressed the second part of the analysis, i.e., the "technological arts" test established in *Toma* because the invention in *State Street* (i.e., a computerized system for determining the year-end income, expense, and capital gain or loss for the portfolio) was already determined to be within the technological arts under the *Toma* test. This dichotomy has been recently acknowledged by the Board of Patent Appeals and Interferences (BPAI) in affirming a §101 rejection finding the claimed invention to be non-statutory. See *Ex parte Bowman*, 61 USPQ2d (BNA) 1669 (BdPatApp&Int 2001).

In the present application, Claims 1-8 and 11-16 lack any technology to execute the method steps claimed. All the items read could be data on a spread sheet. individuals analyzing data collected can do the generating of proposals, selecting of the set of proposals, informing

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the bidding results to the players, formulating of integer or linear programs, solving of the programs and constructing of the winning bids. Therefore, these claims are directed towards non-statutory subject matter. To overcome this rejection the Examiner recommends that Applicant amend the claims to better clarify which of the steps are being performed within the technological arts, such as incorporating/integrating a computer/software/hardware computer network or electronic network functionally with manipulative steps recited in the claims.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.1. Claims 1-3, 5 and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Rothkopf et al. (DIMACS Technical Report 95-09; April 1995; "Computationally Manageable Combinatorial Auctions"); hereinafter referred to DIMACS.

Regarding claim 1, DIMACS teaches a method for executing a combinatorial auction, the method comprising:

reading input data comprising: a plurality of items, a player bidding on the items, and a plurality of bids, where each bid specifies the player bidding, the amount bid, and the list of items included in the bid, generating proposals by utilizing the input data, each said proposal comprising a collection of bids that can be awarded to a player participating in the auction, said bids being actual bids made and being considered simultaneously; selecting a set of proposals such that each item is included in at most one selected proposal; and informing the players bidding on the items of the result of said selecting a set of proposals (see at least page

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3, last full paragraph, which teaches an auction where a plurality of items, such as A, B, C and D are up for bidding and bidders bidding on the items. Bidders correspond to players. As taught by DIMACS, pluralities of bids are made, such as \$100 for AB and \$200 for CD, \$180 for BC, \$50 for A and \$75 for B, proposals are generated for accepting the combination of bids \$50 for A + \$75 for B + \$180 for BC amounting to \$305 the best winning combination. DIMACS then allows for selecting a set of proposals and also informs the players/bidders on the result of selecting a set of proposals).

Regarding claim 2, DIMACS shows that the method according to claim 1, wherein said reading input data comprises reading input data further including at least one type that is specified for each bid, and wherein said generating proposals are limited to collections of bids from a player that are of the same type, and wherein said selecting a set of proposals is limited to sets that include at most one proposal for each player (see at least page 3, last full paragraph, which teaches an auction where a plurality of items, such as A, B, C and D are up for bidding and bidders bidding on the items. Bidders correspond to players. Players/Bidders bid for at least one specified type, that for single item A or B or combined specified type, that AB or BC or CD and then proposals such as for \$305 are limited to collection of bids from a player/bidder that are of the same type and include at most one proposal for each player/bidder).

Regarding claim 3, DIMACS shows that generating proposals comprises generating all possible proposals (see at least page 3, last full paragraph, which teaches an auction where a plurality of items, such as A, B, C and D are up for bidding and bidders bidding on the items.

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Bidders correspond to players. The auctioneer generates all possible proposals, that is \$300 and \$305 and then selects the winning combination).

Regarding claim 5, DIMACS teaches that said selecting a set of proposals comprises selecting a set of proposals that maximizes the total value of the bids included in the selected proposals (see at least page 3, last full paragraph, which teaches an auction where a plurality of items, such as A, B, C and D are up for bidding and bidders bidding on the items. Bidders correspond to players. The auctioneer generates all possible proposals, that is \$300 and \$305 and then selects the winning combination).

Regarding claims 9-10, their limitations are closely parallel to the limitations of claims 1 and are therefore analyzed and rejected on the same basis. As regards using computers to execute a combinatorial auction, see page 3, paragraph 4, "...In AUSM, a computerized combinatorial auction procedure developed at the Cal Tech....".

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4.1. Claims 4, 6, 8 and 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over DIMACS in view of Joslin et al. (US Patent 6,272,483), hereinafter, referred to Joslin.

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Regarding claim 4, DIMACS discloses selecting a set of proposals in a combinatorial auction as analyzed in claim 1 above. DIMACS further discloses formulating the problem of selecting an optimum winning combination (see at least pages 4-14) but does not disclose using an integer programming technique to obtain this solution. However, it is well-known formulating Linear program and/or integer program problems and then solving them using column generation technique for solving Optimization problems (see at least col.1, line 20-col.4, line 67). In view of Joslin, it would have been obvious to one of an ordinary skill in the art at the time of the invention to have incorporated the use of integer programming in DIMACS to obtain solutions to the problem of obtaining the best winning combination of bids from bidders/players wherein the variables, such as number of bids and players are integers because, as explicitly disclosed in Joslin, it helps to solve optimization problems faster and accurately.

Regarding claim 6, the limitations are closely parallel to the limitations of claims 1-5 and are therefore analyzed and rejected on the same basis that is being unpatentable over DIMACS in view of Trick.

Regarding claim 8, limitations, "A method for selecting asset of bids I a combinatorial auction....(a) each item is contained....formulating an integer program....(b) respectively, and an objective function which represents revenue" are already analyzed and rejected in claim 6 above as being unpatentable over DIMACS in view of Joslin. Joslin further teaches the rest of the limitations of claim 8, that is "solving a linear programming relaxation of the integer program in said formulating an integer program for obtaining dual variables associated with each of the constrains.....using dual variables obtained in said solving a linear programming relaxation using a proposal generation method for selecting each player and type, adding the proposal

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generated in said using a proposal generation method and repeating said solving a linear programming relaxation, said using dual variables, and said using a proposal generation method until no new proposals are identified..... solving the integer program that includes all identified proposals; and constructing a set of winning bids from the set of winning proposals", (see at least col.3, line 11-col.5, line 22). In view of Joslin, it would have been obvious to one of an ordinary skill in the art at the time of the invention to have incorporated the various limitations, as stated above to obtain solutions to the problem of obtaining the best winning combination of bids from bidders/players wherein the variables, such as number of bids and players are integers because, as explicitly disclosed in Joslin, it helps to solve optimization problems faster and accurately.

Regarding claims 11-20, their limitations are directed to steps used in formulating linear program/Integer program problems with a plurality of constraints and solving them using column generation technique and all these limitations are disclosed in Joslin (see at least col.3, line 20-col.5, line 22).

4.2. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over DIMACS in view of Joslin and further in view of Pekec et al. (" Making the FCC's First Combinatorial Auction Work Well"; Report No. AUC-00-31-G [Auction No.31]), hereinafter referred to Pekec.

Regarding claim 7, DIMACS in view of Joslin does not disclose checking for ties by adding a constraint. However, in the same filed of endeavor, Pekec discloses checking for ties by adding a constraint (see at least page 7, paragraph 7, heading " The Auction Needs a Foolproof Rule for Breaking Ties" which discloses using a Rule to break ties). In view of Pekec,

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it would have been obvious to one of an ordinary skill in the art at the time of the invention to have incorporated the feature of checking for ties and breaking them, as explicitly disclosed in Pekec, because to avoid litigation in any possible situation involving ties.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

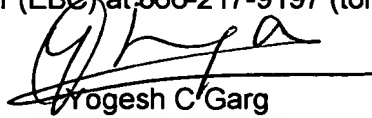
(i) Barnhart et al; " Branch-And-Price: Column Generation for Solving Huge Integer Programs"; Operations Research; vol.46; No.3, May-June 1998; (ii) Gamache et al.; " A column generation approach for large scale aircrew rostering problems"; Operations Research; vol.47; No.2, March-April 1999; both articles extracted from Internet on 4/21/05, (iii) Trick, Michael A.; " A Tutorial on Integer Programming " Sun Jun 14, 1998 extracted from askforJeeves.com web site on 4/21/05; (iv) Degraeve et al.; " Optimal Integer solutions to Industrial Cutting Stock Problems"; Informs Journal on Computing; Linthicum; 1999 extracted from Proquest database on Internet on 4/21/05, (v) Zhi-Long, et al. ; " A column generation based decomposition algorithm for a parallel machine just-in-time scheduling problem"; European Journal of Operations Research; Amsterdam; Jul 1, 1999 extracted from Proquest database on Internet on 4/21/05, and (vi) US Patent 5,615, 254 to Qiu et al. (see at least col.6, lines 16-24) disclose/suggest formulating integer program problems and solving them using column generation technique to obtain optimal solutions in various fields.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh C Garg whose telephone number is 571-272-6756. The examiner can normally be reached on M-F(8:30-4:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wynn Coggins can be reached on 571-272-7159. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Yogesh C Garg
Primary Examiner
Art Unit 3625

YCG
April 21, 05